DOCUMENT RESUME

ED 449 559 EA 030 847

AUTHOR Sternberg, Robert J.
TITLE Making School Reform Work: A "Mineralogical" Theory of School Modifiability. Fastback 467.
INSTITUTION Phi Delta Kappa Educational Foundation, Bloomington, IN.
ISBN ISBN-0-87367-667-X
PUB DATE 2000-00-00
NOTE 46p.; The Fastback series is published every spring and fall; current series editor is Donovan R. Walling. Sponsored by the Rochester, New York Chapter.
AVAILABLE FROM Phi Delta Kappa International, P.O. Box 789, Bloomington, IN 47402-0789. Tel: 800-766-1156 (Toll-free); Web site: http://www.pdkintl.org.
PUB TYPE Opinion Papers (120)
EDRS PRICE EDRS Price MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Change Agents; Change Strategies; *Educational Change; Elementary Secondary Education; Excellence in Education; *Resistance to Change; *School Restructuring

ABSTRACT

This booklet proposes a different approach to understanding schools, school change, and why attempts at change run into so many difficulties. The text is divided into six parts. It examines issues in school reform and restructuring and offers what is called a Mineralogical Theory of school modifiability. This theory posits that there are eight types of schools, each one correlating to a mineral in its degree of openness to change. For example, the rusted-iron school has little self-efficacy and scant desire for change or even the appearance of change. Conversely, a diamond-in-the-rough school is high in both its desire for change and appearance of change and possesses a perceived self-efficacy. This mineralogical theory meshes with the theory of context modifiability, which states that the success of an intervention program depends not only on the program but also on the context in which the program is administered. If, for example, a school is in need of restructuring or any other kind of modification, yet is only weakly modifiable, the school must first become more modifiable. The booklet offers specific strategies for modifiability and presents in toto the School Characteristics Inventory, which assesses a school's contextual modifiability. (Contains 33 references.) (RJM)

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Making School Reform Work: A "Mineralogical" Theory of School Modifiability

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Robert J. Sternberg

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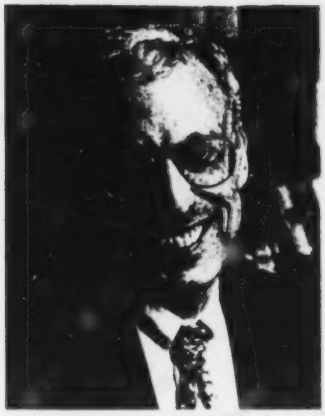

Robert J. Sternberg

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Preparation of this essay was sponsored by a grant from the McDonnell Foundation and the Javits Act Program (grant number R206R950001), as administered by the Office of Educational Research and Improvement, U.S. Department of Education. This essay does not necessarily represent the position or policies of OERI or the Department of Education, and no official endorsement should be inferred.

Photo by Michael Marsland, Yale University Office of Public Affairs.

Series Editor, Donovan R. Walling

Making School Reform Work: A "Mineralogical" Theory of School Modifiability

by
Robert J. Sternberg

ISBN 0-87367-667-X
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Bloomington, Indiana

This fastback is sponsored by the Rochester New York Chapter of Phi Delta Kappa International, which made a generous contribution toward publication costs.

The chapter sponsors this fastback to honor past president John J. Thompson.

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Introduction

How many psychologists does it take to change a light bulb?

First the light bulb has to want to change.

This joke, which has been making the rounds for several years, is no joke when it is transferred to changing schools. In order for a reform process to succeed in a school, first the school must want to change.

In this fastback I discuss what I believe to be the most critical prerequisite of any attempt to restructure schools: the modifiability of those schools. I argue that school reform most often fails not because the reform plan is inadequate, but because the school lacks the modifiability to implement it. The result is that what appears to be a failed plan is actually a plan that was never adequately implemented so that it even could be evaluated.

The essay is divided into six parts. First, I introduce some of the issues in school reform and restructuring. Second, I introduce a mineralogical theory of school modifiability. Third, I give examples of the theory. Fourth, I discuss the implications of the theory for

school change. Fifth, I describe how we assess school modifiability. Finally, I draw some conclusions.

In each part of this essay I sometimes talk of the "school" as though it is a living, breathing organism. I might refer to the school's doing this or the school's doing that. Such language is intentional, but it is not a use of anthropomorphism. Schools are organisms that have a life of their own. If we do not recognize their organismic properties, we will be doomed to failure in our attempts at change because we will fail to recognize that the whole is greater than the parts because of the complex interactions among these parts — interactions that characterize all living organisms. At the same time, the school is not a person: When we wish to assign praise or blame, we need to assign it to specific human or situation agencies, but not to some abstract "school" that is responding to the forces that act on it and is in turn changing in response to those forces.

Many proposals have been made for reforming schools (see Brandt 1993 for a review). These include school-based decision making (for example, Cuban 1988; David 1989; Fullan 1982), school choice (Brandt 1990/1991), untracking (Goodlad and Oakes 1988; Oakes 1985), outcome-based education (Bloom 1976; Sizer 1983), professionalization of teaching (Brandt 1992; Goodlad 1991), restructured curriculum and instruction (Gardner 1983, 1993; Sternberg and Spear-Swerling 1996; Sternberg and Grigorenko 2000), performance assessment (Wiggins 1989*a*, 1989*b*; Wolf, LeMahieu, and Eresh 1992), and total quality management (Bonstingl 1992; Deming 1988), among others. No school effective-

ly can make simultaneous changes in all these categories, and probably no school would want to. Moreover, one school reform plan often contradicts another. But school-reform plans probably resemble diets, in some respects: Almost all of them work in greater or lesser degree, but only if they are implemented effectively. And to be implemented effectively, there is a key prerequisite: school modifiability. A school that is not modifiable will not change effectively, no matter how outstanding the restructuring plan may be.

Why is school change so hard to accomplish? Various reasons have been given, both for the modest successes of some of our schools and for failures heretofore to modify these schools. Such reasons might include: 1) low standards, 2) misallocation of power, 3) a lack of market orientation and choice on the part of parents, 4) insufficient time on task, 5) insufficient funds, and 6) misallocation of priorities.

This essay proposes a different approach to understanding schools, school change, and why attempts at change in the schools run into so many difficulties. The approach is called the theory of contextual modifiability. The basic argument is that to change a school, the school needs to be modifiable in the first place. Thus, if we wish to change a school that is only weakly contextually modifiable, we need to make the school more modifiable before we change it.

Theories of *individual* modifiability have become a mainstay in the field of cognitive development. For example, Vygotsky (1978) suggested that developmental psychologists focus not so much on an individual's level

of attainment as on the individual's potential level of attainment. He introduced the notion of a *zone of proximal development* (ZPD) as measuring the divergence between an individual's developed level of abilities and his or her underlying capacity. The ZPD is presented as an index of individual modifiability. Feuerstein (1979, 1980) has further emphasized the importance of individual modifiability and has suggested that even low-achieving and seemingly low-ability children may be highly modifiable (see also Grigorenko and Sternberg 1998; Sternberg 1990).

The basic idea is that just as we have theories of how modifiable individuals are, we need a theory of the modifiability of contexts. In times past, we used to treat variation across individuals (individual differences) as "error." Some people still do. Now we treat variation across contexts as error. For example, if a program works in one school but not in another, we write that off as the "error term" in our analysis. But those who have worked with schools know that interventions in schools work in some school contexts but not in others. Why does this happen? Is there any way of knowing in advance how likely the context is to be modifiable, independent of the specific intervention proposed for it?

The Mineralogical Theory of School Modifiability

The theory of contextual modifiability as applied to schools requires that one ask three questions about a school (or other context) in order to assess its modifiability. The three questions are:

1. To what extent is there a *desire for actual change* in the school culture as a whole?
2 To what extent is there a *desire for the appearance of change* in the school culture as a whole?
3. What is the *self-efficacy* of the school culture with respect to its own quality?

If, for convenience, we respond to each of these questions with a value that is either "low" or "high," then we end up with eight different kinds of school (or other) cultures with respect to modifiability. The argument here is that the eight kinds of cultures differ rather dramatically in how modifiable they are. Of course, a school need not be a pure case; it may be a mixture of kinds of cultures. Such mixed cultures are likely because every school embraces not only a culture as a whole, but also

a collection of subcultures. Administrators, teachers, maintenance staff, students, and parents, among others, may each perceive and participate in a different subculture or set of subcultures. Moreover, these are not the only possible cultures with respect to modifiability. Yet they do appear to encompass some of the major school types. Indeed, they could be applied in theory to any context, whether at the level of the organization or even of the individual.

Although the theory could apply to a variety of levels from a school district to an individual teacher, for convenience the unit of analysis here will be the school.

Modifiability can be of two basic kinds: surface-structural or deep-structural. (Of course, there is an underlying continuum here that I have dichotomized for convenience.) Surface-structural modifiability refers to the extent to which an intervention seeks merely to build on what is already there in the school. Surface-structural modifications make changes, but within the context of the school as it exists. Deep-structural modifiability refers to the extent to which more profound changes can be achieved. A deep-structural intervention requires building new organizational structures in the school and making at least some fundamental changes in the nature of the education program. Thus the modifiability of a school depends primarily on desire for actual change and secondarily on desire for the appearance of change and self-efficacy (Bandura 1997), that is, belief in the school's ability to handle the educational process.

Contexts may sometimes be at least partially "domain-specific." In other words, one department will fall

into one category, another department (or other unit) into another category. Moreover, modifiability may also depend on whether what a consultant has to offer matches the school's priorities for change. The school may be modifiable with respect to some areas but not others.

Contextual modifiability is not an intrinsic property of a school or other context; instead, it is an interaction between individuals and collectivities within the organization with the organization as a whole. Modifiability may be perceived differently by different individuals or groups and may actually be different for these individuals or groups. For example, changes that affect teachers may have no effect whatsoever on grounds maintenance staff.

Alternative Contexts and Their Modifiability

Each of the eight types of schools is depicted in terms of a different kind of mineral. Table 1 summarizes the theory of contextual modifiability.

The Rusted Iron School is low in desire for actual change, desire for appearance of change, and self-efficacy. The mood of the school is despondence. Its self-belief is that "We're lost. We're hopeless." Typical self-statements of this school are: "We were once OK, but now we're long gone," "We're beaten down with bureaucracy from one side and discipline problems from the other," and "We just try to get through the day."

Various signs indicate a Rusted Iron School. Among these signs are an entrenched bureaucracy, apathy, a de-

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Table 1. Eight types of school in the theory of contextual modifiability.

Description	Desire for Actual Change	Desire for Appearance of Change	Self-Efficacy	Modifiability	
				Surface	Deep
Rusted Iron	L	L	L	L	L
Granite	L	L	H	L	L
Amber (with Internal Insects)	L	H	L	ML	L
Opal	L	H	H	ML	L
Cubic Zirconium	H	L	L	ML	L
Slightly Imperfect Diamond	H	L	H	MH	ML
Lead	H	H	L	MH	ML
Diamond in the Rough	H	H	H	H	H

cayed physical plant, staff burnout, lack of follow-through on agreements, indifference to served population, and lack of resources. The prognosis for change in a school showing these signs is poor: The likelihood of both surface-structural and deep-structural change is low.

The Granite School is low in desire for actual change, low in desire for appearance of change, but high in self-efficacy. Its mood is one of smugness. Its self-belief is that "We're sure and solid like the Rock of Gibraltar. Change would only chip away at us." Typical self-statements are: "We may not look great, but we're solid and durable," "This is a school that works," and "We teach students the basics, and we keep them in line."

Some signs of a Granite School are a traditional curriculum, emphasis on discipline, pride in always having done things the way they're now being done, old materials, and grimness in the attitudes of personnel. The prognosis for this school, like the prognosis for the Rusted Iron School, is poor: Both surface-structural and deep-structural modifiability are low.

The Amber School (with internal insects) is low in desire for actual change, high in desire for the appearance of change, and low in perceived self-efficacy. Its mood is one of frustration. Its self-belief is that "We're internally flawed. To change would destroy our very core and us with it." Thus the Amber School believes that it has internal flaws: If they were to be removed, it would result in the destruction of the school, just as removing internal insects from amber would destroy the amber. Typical self-statements are: "We know we've got problems, but you just can't beat the system here," "Moving the school ahead is like moving a graveyard anywhere," and "The core is rotten: The administration hasn't budged in years."

Some signs of an Amber School are an inured and often aging administration, obvious structural flaws in the instructional program, hyper-stability in the face of dissension, and inaccessibility of the power structure. The prognosis for surface change is medium low, and the prognosis for deep-structural change is low.

The Opal School is low in desire for actual change but high in desire for appearance of change and high in perceived self-efficacy. Its mood is one of self-righteousness.

Its typical self-belief is that "When you're the best, you've got to put your efforts into staying that way." Typical self-statements are: "Anywhere you look, creative, new things are happening," and "We're the best in the state. Look at this gym (or lab or auditorium or whatever)."

This school is like an opal in that if you look at it from different perspectives, it looks different, as if it is changing when, in fact, it is always the same. Only the appearances are different. And the power structure of the school believes that changing the school, like changing an opal, is likely only to make it worse. It fares best when left alone.

Signs of an Opal School are typically affluence, a shiny physical plant, many (often unused or ill-used) resources, slickness of administrators, clear emphasis on appearances, high salaries, and surprising lack of mission. The prognosis for surface structural change is moderately low; the prognosis for deep-structural change is low.

The Cubic Zirconium School is high in desire for actual change, but low in both desire for the appearance of change and in perceived self-efficacy. The mood of the school is fraudulence: As is the case with a cubic zirconium, no one wants viewers to know that it's fraudulent, so viewers are kept at a distance. Its self-belief is that "We're a fraud. We can't let outsiders get too close, lest they find out." Typical self-statements are: "We can't have outsiders disrupt our educational programs," "You can see yourself that things are fine here. Thanks

for stopping by," and "We don't do research here; we teach children."

Signs of a Cubic Zirconium School are resistance to scrutiny, a history of no research, descriptions that emphasize show rather than substance, and staff that are reluctant to talk to outsiders. The prognosis for surface-structural change is moderately low; the prognosis for deep-structural change is low.

The Slightly Imperfect Diamond School is high in desire for actual change, low in desire for the appearance of change, and high in perceived self-efficacy. Its mood is one of denial. Its self-belief is that "If only we could get rid of X, we'd be really good." "X" is a different thing in different schools, but it is the scapegoat for the school's woes. The school is like a slightly imperfect diamond in that it has, from its own point of view, one not entirely apparent flaw, which it would deny if it could. Typical self-statements of the school are that, "We're pretty damn good, though we've got this X to deal with," "If it weren't for X, we'd be number one," and "We try to keep X in line (ha-ha)."

Signs of the Slightly Imperfect Diamond School are praise of the system coupled with veiled digs at X, deflection of probing questions about X, attempts to deny the problem of X, and generally favorable signs, but subtle hints that something is wrong. The prognosis for surface-structural change is moderately high, and for deep-structural change is moderately low. Indeed, if the problem of X can be dealt with successfully, the school will be in an excellent position to change.

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The Lead School is high in desire for actual change, high in desire for appearance of change, but low in perceived self-efficacy. Its mood is one of superstition. Its self-belief is that "We need a quick way to turn lead into gold." The school has an almost alchemical or magical view that some quick fix will turn it into the kind of school it wants to be. Typical self-statements are that "We'll give you a month to show what you can do," "We can give you an hour per week," "We need quick results here," and "We want change, not research."

Signs of a Lead School are impatience, magical beliefs with respect to possibilities for change, lack of interest in understanding interventions, lack of understanding of programs, and an emphasis on doing, not planning. The prognosis for surface-structural change is moderately high, and that for deep-structural change is moderately low. If one can get the self-esteem of the school up, so that it is not forced to resort to superstition, the prognosis can be excellent.

The Diamond in the Rough School is high in desire for actual change, desire for appearance of change, and perceived self-efficacy. Its mood is one of hopefulness. Its self-belief is that "We've got the raw material here to be really great, and we're going to be." Examples of self-statements are that "We can make this work and we will," "We're on the way up," "You can help us be what we want to be," "There'll be problems but we can overcome them," and "We want to be great."

Signs of a Diamond in the Rough School are willingness to devote such resources as time and money to

change, planfulness, accurate recognition of strengths and weaknesses, and receptiveness. The Diamond in the Rough School views itself in just this way, as a diamond that has a great deal of value but needs to be shaped and formed. Often it will seek outsiders to help it do so. The prognosis for surface-structural change and for deep-structural change is high.

Examples of the Various Kinds of Schools

To many of the readers of this fastback, at least some of the above types of schools will be familiar. Nevertheless, it may be helpful to illustrate some of the types of schools with examples of encounters that I've had in my past dealings with schools.

"Irontown" was a Rusted Iron school. For starters, it was extremely difficult to find out where in the bureaucracy of the Irontown school district one should make a contact. Eventually we made a contact. The contact person, who was from the central office, did not seem to have much enthusiasm for meeting with us but agreed to do so. Inexplicably, the meeting later was canceled by a secretary. After yet another cancellation, the meeting finally took place. However, the official we contacted did not show up. The people who did show up seemed to be minor functionaries without much idea of (or interest in) how the system worked. We did make some progress in the meeting, however; and each party agreed to make some preparations for a future meeting. This meeting took place, but it was as though the first meeting had never happened. There had been no follow-

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through on the part of the school personnel. Moreover, they seemed to have only a foggy remembrance of the first meeting. This time, we tried specifying in writing what each team would do in order to facilitate interaction with the district. The next meeting was canceled. When we eventually met again, once more, nothing had happened. We discontinued contact with the school district after this meeting.

Irontown is an urban school district in which most of the schools are inner-city schools with what might euphemistically be called "hardened" teachers and students. The emphasis in the classrooms tends to be on discipline and on simply getting through the day. From what few observations we have had, there seems to be relatively little education going on. The district is generally considered to be one of the worst in the state, and our limited experience with the administration led us to see no basis for believing that its standing would change.

"Granite Academy" was a parochial school that drew its students mostly from a blue-collar ethnic population. The school had a reputation for regimentation, but also for giving students a fine education. I had no trouble making contact with the proper officials and met with them promptly. The officials listened politely to my presentation for a suggested intervention. They seemed interested and asked several questions. They told me that they would get back to me.

That they did the next day. Their decision was that they did not really want a research project in the school.

They informed me that they had found what we had to say interesting; but they felt that their programs did teach for thinking and, moreover, that their school was not in need of fixing, so there was no point in fixing it. It had been clear all along that they really did have high confidence in what they were doing and that it would take hard persuasion to get them to change. Obviously, my persuading wasn't hard enough. In this particular case, the questioning attitude I sought to instill in the students was in direct conflict with the presuppositions of the school and many of the personnel in it. The emphasis in the school was on rote memorization of both secular and religious content, and the successful student was one who spit back the facts, or what would often seem to some to be opinions rephrased as facts. It would have been difficult to succeed in this school, given its Granite culture.

Whereas Granite Academy saw itself as a bastion preserving traditional values, "Opalville" saw itself as at the forefront of modern education. This school had a high budget for educational materials, a high budget for inservice presentations, and some of the highest salaries in its state. A public school in a well-heeled town, Opalville was generally considered to be among the best schools in the state. They welcomed researchers as much as schools ever do — but almost exclusively for one-shot or two-shot research studies. They were interested in the research as part of their image, rather than as a vehicle for change. Moreover, the inservice pattern was one of one-shots. This month might be on

school reform, the next on thinking skills, the next on drug education, the next on classroom management. The school paid good money to bring in nationally known consultants, but there seemed to be little follow-through. Again, one had the feeling that they were more concerned about the appearance of forward-looking in-service programs than they were about any real change. And indeed, the school did not appear to be changing much. Rather, it rested on a fine reputation and on putting a lot of money into education to give the appearance it wanted.

As a last example, consider "Diamond City." Diamond City was comparable socioeconomically to Opalville, but their attitude toward school reform was very different. Whereas Opalville wanted only one-shot, brief research projects, Diamond City wanted only research projects that brought with them some real chance of change in the schools. They encouraged us to get involved not only with the school administration and the teachers, but also with the board of education and with parent groups. Our program became a sort of community effort, and we would occasionally get calls from interested parents about the program and what they could do to support it. The program lasted five weeks and, in terms of quantitative data, was among the most successful we've done. The combined support of administration, teachers, board of education, and parents made this the kind of experience any consultant would like to have.

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Obviously, the success of an intervention will depend in large part on the quality of the intervention and on the skill with which it is executed. A good intervention stands a better chance of success in any school district, and a bad one is not likely to work in even the best districts. Nevertheless, it is useful to take into account the modifiability of the context in which one works. Interventions do not have an equal chance in every context in which they might be applied. It is useful for the intervener to understand the context into which he or she is going and, ultimately, for the school to understand their attitude toward modifiability.

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Implications for Intervention

The theory of contextual modifiability implies that the success of an intervention program depends not only on the program, but also on the context in or through which the program is administered. Surface-structural interventions (building on what's already there) have a reasonable chance of succeeding in a variety of schools, but deep-structural interventions have a good chance of succeeding in only a relatively small proportion of schools unless the schools' modifiability is changed.

Low-modifiable contexts can be made more modifiable, but to do so requires rather massive intervention in all aspects of the context. One cannot expect normal interventions to change the context markedly and durably — the context is more likely to change them. To change the modifiability of the context, the school needs to set up a task force with that particular goal in mind. The task force needs to identify what the cultural problems are in the school, to document these problems, to convince other people that these problems exist and that they are indeed problems, and then to work with the

school as a whole for change. While interventions can be of value in a less modifiable context, one needs to be realistic with respect to what they are and are not likely to accomplish. Nevertheless, even small changes now may plant seeds for larger changes later on.

Specific Strategies

If a school is in need of restructuring or any other kind of modification, yet is only weakly modifiable, the school must first be made more modifiable. Otherwise the modification effort is likely to fail; and the blame is likely to be placed on the restructuring plan, rather than on the school's ability to implement that restructuring plan. A concrete strategy involves what might be called the problem-solving cycle (Sternberg 1985, 1997*a*, 1999). This strategy can be used both to render the school more modifiable and to implement the actual plan for restructuring.

1. *Recognizing the existence of a problem.* The fact that someone is concerned about the school's ability to implement a restructuring plan indicates that someone already has recognized the existence of a problem. This individual needs to make all stakeholders aware of this problem. The idea behind the mineralogical theory can provide a vehicle for doing so because it helps concretize the notion that modifiability needs to precede attempts at modification. Such attempts will fail if the school is not modifiable to begin with.

Stakeholders also need to be aware of the problems that have led to the desire to restructure. There are, of

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course, any number of signs that can indicate the potential existence of a problem. They include, but are not limited to, 1) low student performance on ability or achievement tests; 2) low teacher performance on competency tests; 3) dissatisfaction of teaching staff with the way the school is run; 4) dissatisfaction of administrators with the willingness of teachers to implement school policies; 5) global low morale; 6) the realization on the part of any stakeholders that the school is stagnating — that it is holding on to a reputation it acquired years ago but no longer deserves; and 7) frequent turnover in administrative, teaching, or support staff.

2. *Defining the nature of the problem.* A second sensible step is to define exactly what the problem is. Here, the categories of the mineralogical theory may be helpful in specifying why the school is not easily modifiable. Does it lack the desire to change? The desire to appear to change? Self-efficacy? If the staff of a school want change but are afraid to appear to change because of the possibility or likelihood of disapproval by the school board or community, chances are that realistic change just will not occur. If the school wants only to appear to change while really staying the same, at best the school will accomplish the appearance of change. And if the school is low in self-efficacy and believes it is unable to change, it is unlikely to change, no matter how much it may desire to.

In some respects, defining the problem or problems is the most important part of any change process; if the problem or problems are defined incorrectly, then any

problem solving that comes afterward is likely to end up being misguided or even detrimental. It is important that all stakeholders be consulted and that a serious process of problem definition be undertaken. First, this is the only way to get the backing of these individuals for any subsequent change process. Second, without consultation with all stakeholders, it is impossible to know the full extent of any problem. Third, change plans that do not reflect all interests and the full extent of the problem are especially susceptible to sabotage by those who believe that their needs are not being met.

3. *Representing a vision of the desired end state.* Although the school's representation of its vision for the desired end state of restructuring may not be totally clear, it must have enough clarity so that stakeholders believe they know what they are striving toward. In the absence of such a vision, the school is likely to follow a desultory path that leads to no clearly specified outcome in particular. It even may end up in an end state that is considerably worse than the state in which it started. While the vision may be based on an existing restructuring plan, no plan is specified in sufficient detail to anticipate all of the issues that will arise in a specific school implementation. Moreover, any plan must be adapted to the realities of a given school. Published plans can provide an outline for school reform but can never fill in all the details that will be needed.

4. *Constructing or selecting a strategy for reaching the end state.* Perhaps the major obstacle facing school reform efforts is the lack of a clear sense of how to get from where

the school is to where the school wants to be. In essence, the school has a vision of where it wants to go but not of how to get there. Negotiating a path can be a long and difficult process. It becomes even more difficult if people disagree about the steps that are "permissible" in getting to the desired end state. For example: Is it permissible to lay off staff? Is it allowable to budget for and then buy new materials? Is it acceptable to bring in outside consultants? Sometimes the path seems to be so long that people despair of ever reaching an end, much as people often despair of certain highway construction projects ever reaching any kind of final resolution. Several techniques can be used to help make the strategy more manageable (Newell and Simon 1972; Sternberg 1999):

- *Subgoaling*. Rather than just having an end state as a goal, the school sets up a series of subgoals, each of which represents measured progress in achieving the final goal. Instead of the school-change process being implemented in one fell swoop or even in a series of steps, it is implemented in several series of steps, each leading to a clearly definable subgoal. For example, one subgoal might be a targeted change in learning goals. A second might be a targeted change in the organization of teaching staff in order to achieve these goals. A third might be the purchase of new curriculum materials that will facilitate the reaching of the new learning goals. The school proceeds from one subgoal to the next until the final goal is reached.
- *Means-ends analysis*. The school asks itself what the difference is between what it is doing now and what

it wishes to be doing. Differences between its present state and the end state are clearly and specifically identified. For example, the end state may involve teachers who are deliberately and strategically developing children's creative-thinking skills by encouraging the children to invent, discover, imagine, suppose, and create. Perhaps now the children are being told what creativity is but are not being given strategies to unleash their own creativity. Once this difference between present and end states is identified, steps can be designed and then taken to reduce the difference between the present state and the desired end state. The process continues until there is no difference. Many times I have heard schools use as a metaphor flying or rocketing to a chosen destination, with the idea that we thereby can be relieved of the forces of gravity and inertia that drag us down in everyday life. Indeed, I just returned from an education conference based on this metaphor. The metaphor is not a good one, because schools operate in the real world, where gravity and inertia really do exist. We will do better in achieving change if we recognize and cope with these forces, rather than trying to pretend they do not exist. Means-ends analysis reminds us that change occurs by our transforming where we are into where we want to be; it does not occur by rocketing from one destination suddenly to another.

- *Working backward.* Sometimes it is not clear how one can get from where one is to where one wants to

go. In this case, it can be useful to work backward. One starts with the end state and then works backward to figure out the steps that need to be taken. For example, if a school wishes to implement teaching based on a model of successful intelligence (Sternberg 1997*b*, 1998; Sternberg, Torff, and Grigorenko 1998), then one might start with the parameters for teaching and assessing analytically, creatively, and practically and then figure out how existing teaching would need to be changed to meet these parameters.

5. *Allocating resources to reach that end state.* Increasing the modifiability of a school, like restructuring the school, requires a substantial allocation of time, effort, and, possibly, funds. If the school does not want to change or does not want to appear to change, then in-service programs, schoolwide meetings, and even meetings with the community may be needed in order to remove these blocks to progress. Otherwise, any attempt at restructuring will be undermined by stakeholders who have a vested interest in the status quo. Such undermining may take place in any case, but it is likely to be substantially worse where a consensus has not been reached on a vision and how to achieve it.

6. *Monitoring progress while the strategy is being implemented.* With a strategy in operation, it is important to monitor that it is working. Sometimes the implementation of a plan begins to go off its target, and it is better to catch such divergences before they become so great that it is almost impossible to get back on the right track.

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The plans for monitoring, as well as for evaluation, should be in place *before* the strategy is implemented. Although these plans may have to be modified as things move along, if there are no plans in place in advance, it may be too late to form good monitoring and evaluation plans once the reform effort has started.

7. *Evaluating the success of the strategy after its implementation has been completed.* Recently a principal of a school that had adopted one of the restructuring models mentioned in the introduction gave an all-day workshop at a conference I attended on how he had restructured his school to fit the model. The model had now been in place for almost ten years. He was very proud of the result. I asked him how the restructuring effort had been evaluated. He indicated that there had been no formal evaluation at all but that the students were doing very well with the new model. He then admitted, with no prompting, that the students mostly came from upper-middle-class families, so they probably would have done well in any case.

Unfortunately, the principal is much closer to the rule than the exception. The overwhelming majority of efforts receive no formal evaluation or one that is so weak that it could not be reported in any reputable refereed journal. Such efforts are made at enormous costs of resources, and those who have participated in these efforts are given no evidence at all that their efforts have succeeded. As any administrator knows, emotional satisfaction with a result is not tantamount either to improved academic achievement on the part of the students or even better teaching on the part of the teach-

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ers. All programs need to be evaluated, no matter how happy they make people.

A good evaluation will involve both cognitive and affective (emotional) components. It should look at how much stakeholders like the new model, but also how well they are performing under the new model. At minimum, an evaluation should involve measurement of changes in teacher behavior, measurement of changes in student behavior, and measurement of demonstrable improved outcomes for teachers and students.

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Assessment of Contextual Modifiability

I have developed an inventory, enhanced by Carolyn Callahan of the University of Virginia, for measuring contextual modifiability. The inventory may be used at will by those who wish to use it. It is not normed or standardized and, indeed, it is difficult to say how standardization could take place, given that schools represent a heterogeneous population.

The inventory consists of background questions, overall evaluations, and specific evaluations. Specific-evaluation items are rated on a 5-point Likert scale with options ranging from "not at all characteristic" of the school (1) to "very characteristic" of the school (5). Items are divided into 8 subscales: rusted iron (items 1-10), granite (items 11-20), amber (items 21-30), opal (items 31-40), cubic zirconium (41-50), slightly imperfect diamond (items 51-55), lead (items 56-60), and diamond in the rough (items 61-70).

To score the inventory, one calculates the mean rating for each group of items. Higher means indicate more of a tendency for the school to show the characteristics

of a particular kind of school. The profile of a school reveals a pattern of how the school is perceived. Of course, different individuals and groups may perceive the school in different ways.

School Characteristics Inventory (SCI)

The purpose of this inventory is to ascertain characteristics of the school in which you teach. The inventory is completely anonymous and, in any case, only group-aggregate data and not individual data will be reported. Therefore please answer all questions as fully and as accurately as possible.

I. Demographic Data

1. City in which you teach: _____
2. The grade level(s) you teach: _____
3. Subject taught (for secondary teachers): _____
4. Type of school: Public ____ Private nonsectarian ____
   Private sectarian ____
5. Socioeconomic level of majority of students:
   Generally low ____ Low to medium ____ Medium ____
   Medium to high ____ Generally high____
6. Your age: 20-30 ____ 30-40 ____ 40-50 ____ 50-60 ____ 60+ ____
7. Your sex: M ____ F ____
8. Number of years you have been teaching: _____
9. Education: Bachelor's ____ Master's ____ Doctorate ____
10. Your satisfaction with teaching:
    Generally low.____ Low to medium ____ Medium ____
    Medium to high ____ Generally high ____

II. Overall Evaluations

1. *Openness to genuine change*: To what extent do you view your school as open to genuine change in its educational policies and procedures?
   Not at all ____ Slightly ____ Fairly ____ Quite ____ Very ____
2. *Openness to appearance of change*: To what extent do you view your school as wanting to appear to be open to change, regardless of whether or not it really is open to change?
   Not at all ____ Slightly ____ Fairly ____ Quite ____ Very ____

3. *Quality*:
   a. To what extent do the teachers and administrators of your school think highly of the school and believe it provides genuinely high-quality education to students?
   Not at all ____ Slightly ____ Fairly ____ Quite ____ Very ____
   b. To what extent do you think highly of the school and believe it provides genuinely high-quality education to students?
   Not at all ____ Slightly ____ Fairly ____ Quite ____ Very ____
4. *Comments*:
   a. What do you think are the strongest points of your school?
   b. What do you think are the weakest points of your school?

III. Specific Evaluations

Please indicate on a 1-5 scale the extent to which each of the following expressions characterizes your school, where

1 indicates "not at all characteristic."
2 indicates "slightly characteristic."
3 indicates "fairly characteristic."
4 indicates "quite characteristic."
5 indicates "very characteristic."

1. __ People are despondent about the situation in the school.
2. __ People believe that the prognosis for the school is hopeless.
3. __ People believe that the school once was OK, but now is not nearly as good.
4. __ The school is highly bureaucratic.
5. __ People are apathetic about the school.
6. __ The physical plant is decayed.
7. __ The staff is burned out.
8. __ The staff is pretty much indifferent to the well-being of the students.
9. __ The school lacks instructional resources.
10. __ When agreements are made between administrators and teachers, follow-through is poor.
11. __ The staff is smug about the quality of education being provided.
12. __ People believe that change would only make the school worse.
13. __ People believe that the school provides a very solid education.
14. __ People believe that the school works well as a system.
15. __ The curriculum in the school is traditional.
16. __ The emphasis in the school is on discipline.

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17. __ People take pride in doing things the way they've always been done.
18. __ Educational resources are old, with few new materials being provided.
19. __ The attitude of the staff is grim.
20. __ There is a lack of flexibility in the school.
21. __ People are frustrated with the school.
22. __ People believe that the school has one or more fundamental flaws in its operation.
23. __ People believe that the school cannot be changed in any fundamental way without being destroyed.
24. __ Staff believe that they just can't "beat the system" in the school.
25. __ People believe the administration is rigid.
26. __ The administration of the school has not changed, either in identity or philosophy, in a long time.
27. __ The instructional program of the school has obvious flaws.
28. __ The power structure of the school is inaccessible.
29. __ Despite dissension, little ever changes in the school.
30. __ The core of the school is rotten.
31. __ The mood of the school is one of self-righteousness.
32. __ People believe that the school is one of the best in the state.
33. __ People believe that change would make the school only worse.
34. __ People believe that the school has a creative educational program.
35. __ The school emphasizes that it is in an affluent community.
36. __ The school has a "shiny" physical plant.
37. __ The school has many resources, but they are underused.
38. __ There is a clear emphasis on appearances in the school.
39. __ The school seems to lack mission.
40. __ Teacher salaries are high in the school as a testament to the community's affluence.
41. __ The mood of the school is one of fraudulence.
42. __ The school tends to resist scrutiny of any kind by outsiders.
43. __ The school has a history of little or no research being done in it.
44. __ Publicity for the school emphasizes show rather than substance.
45. __ Staff at the school are reluctant to talk to outsiders.
46. __ People in the school try to maintain appearances in order to cover flaws in the program.
47. __ Inservice programs by people from outside the district almost never occur.
48. __ Parents are not welcome to see what is happening in the school.

49. __ The reputation of the school is substantially better than the school itself.
50. __ Insiders view the school considerably more negatively than do outsiders.
51. __ The school would be really good except for one major problem (whatever that problem might be).
52. __ The school has a major problem, but people try to deny its existence.
53. __ People generally praise the school, except for one major imperfection.
54. __ People recognize there is a problem with the school, but try to keep it from getting out of hand.
55. __ People believe that the school has the potential to be really good if only a major problem with it could be solved.
56. __ People want to improve the school, but more rapidly than is feasible.
57. __ People seem to possess almost magical beliefs about the possibilities for rapid improvement.
58. __ There is an emphasis in the school on doing, rather than on reflecting about what is done.
59. __ There are new programs in the school, but people don't really understand them or why they would work.
60. __ There is great emphasis on the "quick fix" to make things better.
61. __ People think well of the school and still are hopeful for improvement of the school.
62. __ People believe that the school is "on the way up."
63. __ The staff is willing to devote time and resources to improving the school and its educational program.
64. __ People accurately recognize the strengths and weaknesses of the school.
65. __ The school is characterized by careful planning for improvement.
66. __ The resources of the school are used well.
67. __ Administrators and teachers listen to each other and benefit from each other's suggestions.
68. __ The school is characterized by flexibility and willingness to adapt to changing circumstances.
69. __ The staff is very devoted to the education of the students.
70. __ There is a sense of pride in the school.

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Conclusion

In evaluating intervention programs, we tend to view both successes and failures as due wholly to the intervention program. This article represents a different stance — that the success or failure of an intervention may depend as much on the modifiability of the context in which the program is implemented as it does on the program itself.

In particular, schools and other organizations differ in their modifiability along the lines set out in this essay. Schools vary in their desire for actual change, their desire for the appearance of change, and in their self-efficacy. Higher levels on each of these attributes are associated with greater modifiability. Attempts to modify schools may be rendered difficult or impossible if the schools are not modifiable. Thus those who wish to restructure a school first should check on the extent to which the school is modifiable. If its modifiability is low, this is the first issue to attend to, not the restructuring itself, because modifiability is a prerequisite for any restructuring.

If a school is relatively low in modifiability, then a plan needs to be introduced that facilitates modification. This

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plan should involve seven steps: 1) recognizing the problem, 2) defining the problem, 3) representing a vision of the desired end state, 4) constructing or selecting a strategy for reaching that end state, 5) allocating resources to reach that end state, 6) monitoring progress while the strategy is being implemented, and 7) evaluating the success of the strategy after its implementation is completed.

Modifiability may be assessed through the inventory or it may be assessed by other, less formal means. It is worth assessing, however, because organizations that are only weakly modifiable may themselves have to be changed before interventions can improve student or teacher performance.

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ISBN 0-87367-667-X

Deaf students at the Alexander Graham Bell School in Cleveland, Ohio, enjoy reading in this early 20th-century class.

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